

IN THE CLAIMS:

1. (Currently Amended) An information recording method in which information is recorded by irradiating a recording track on a recording medium with an energy beam and thereby forming recording marks, said recording track being wobbling or deforming with a predetermined period, said information recording method comprising the steps of:

generating a recording clock from a signal obtained by detecting the wobble or deformation of said recording track;

detecting pre-recorded information including data for determining different kinds of recording mark arrangements of control data on said recording medium; and

setting a conversion multiplying factor between a period of the signal obtained by detecting said wobble or deformation and a period of said recording clock, based on said detected pre-recorded information; and

forming said recording marks in synchronism with said recording clock.

2. (Previously Presented) An information recording method according to claim 1, further comprising the steps of:

making quantities of user data recorded per single sector equal irrespective of a value of the conversion multiplying factor used when generating said recording clock from said signal obtained by detecting said wobble or deformation; and

making a length of a buffer area preceding a head of a user data portion or a buffer area following a terminus portion of said user data portion longer as the conversion multiplying factor becomes higher.

3. (Previously Presented) An information recording method according to claim 2, further comprising the step of keeping a physical length ranging from a head of said buffer area preceding said user data portion to a terminus portion of said buffer area following said user data portion at a nearly same length independently of said conversion multiplying factor by changing the number of channel bits.

4. (Previously Presented) An information recording method according to claim 3, further comprising the step of conducting recording over a length of said buffer area preceding said user data portion and/or a length of said buffer area following said user data portion in a control data zone of said recording medium beforehand.

5. (Currently Amended) An information recording apparatus comprising:
an energy beam generator
a power adjusting mechanism for adjusting a power level of an energy beam generated by said energy beam generator;
a holding mechanism capable of holding a recording medium;
a moving mechanism for irradiating said recording medium with said energy beam and relatively moving said energy beam with respect to said recording medium to thereby form recording marks;
a detector for detecting an energy beam reflected or transmitted in said information recording apparatus, a recording track on said recording medium being wobbled or deformed with a predetermined period and said recording medium pre-recording information including data for determining different kinds of recording mark arrangements of control data;
a wobble or deformation detection circuit to detect the wobble or deformation of the recording track based on a detection signal supplied from the energy beam detector;
a recording clock formation circuit to generate a recording clock from a signal obtained by detecting the wobble or deformation, and a power level of the energy beam being changed in synchronism with said recording clock by the power adjusting mechanism; and
a frequency changer circuit to change a conversion multiplying factor between a period of the signal obtained by detecting said wobble or deformation and a period of said recording clock, based on said pre-recorded information of control data detected by said detector.

6-8 (cancelled).

9. (Currently Amended) An information reproducing method comprising the steps of:
irradiating a recording track on a recording medium with an energy beam;
detecting an intensity of an energy beam reflected or transmitted by said recording medium, out of said energy beam with which said recording medium is irradiated;
reproducing information recorded on said recording medium, from an intensity signal of said reflected or transmitted energy beam, the recording track being wobbling or deforming with a predetermined period;
generating a reproducing clock from a signal obtained by detecting the wobble or deformation of said recording track;
discriminating reproduced data by taking said reproducing clock as a reference;
detecting pre-recorded information including data for determining different kinds of recording mark arrangements of control data on said recording medium; and
setting a conversion multiplying factor between a period of the signal obtained by detecting said wobble or deformation and a period of said reproducing clock, based on said pre-recorded information of control data detected by said detecting step.

10. (Currently Amended) An information reproducing apparatus comprising:
an energy beam generator;
a power adjusting mechanism for adjusting a power level of an energy beam generated by said energy beam generator;
a holding mechanism capable of holding a recording medium;
a moving mechanism for irradiating said recording medium with said energy beam and relatively moving said energy beam with respect to said recording medium;
a detector for detecting an energy beam reflected or transmitted in said recording medium whose recording track is being wobbled or deformed with a predetermined period and on which information of control data is pre-recorded;
a clock generation circuit to generate a reproducing clock from a signal obtained by detecting the wobble or deformation of the recording track, and reproduced data being discriminated by taking said reproducing clock as a reference; and

a frequency changer circuit to change a conversion multiplying factor between a period of the signal obtained by detecting said wobble or deformation and a period of said reproducing clock, based on said pre-recorded information including data for determining different kinds of recording mark arrangements of control data detected by said detector.